

1 Introduction

Manchester is one of several New Hampshire communities regulated under the Environmental Protection Agency's (USEPA) National Pollutant Discharge Elimination System (NPDES) Phase II rule (40 CFR 122). The rule requires regulated operators of municipal separate storm sewer systems (MS4) to develop a Stormwater Management Program (SWMP) and Best Management Practices (BMPs) to reduce the impacts of stormwater discharges. The requirements are outlined in the NPDES General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4s), which was signed on January 18, 2017 with an effective date of July 1, 2018, hereinafter referred to as the 2017 MS4 Permit.

This SWMP Plan describes and details the activities and measures that will be implemented to meet the terms and conditions of the permit.

1.1 Regulatory Background

The Stormwater Phase II Final Rule was promulgated in 1999 and was the next step after the 1987 Phase I Rule in the United States Environmental Protection Agency's (USEPA's) effort to preserve, protect, and improve the Nation's water resources from polluted stormwater runoff. The Phase II program expands the Phase I program by requiring operators of MS4s in urbanized areas, through the use of National Pollutant Discharge Elimination System (NPDES) permits, to implement programs and practices to control polluted stormwater runoff. Phase II is intended to further reduce adverse impacts to water quality and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges that have the greatest likelihood of causing continued environmental degradation. Under the Phase II rule all MS4s with stormwater discharges from Census designated Urbanized Area are required to seek NPDES permit coverage for those stormwater discharges.

On May 1, 2003, EPA Region 1 issued its Final General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (2003 MS4 Permit) consistent with the Phase II rule. The 2003 MS4 Permit covered "traditional" (i.e., cities and towns) and "non-traditional" (i.e., certain Federal and state agencies and/or facilities) MS4 Operators located in the states of Massachusetts and New Hampshire. This permit expired on May 1, 2008 but remained in effect until operators were authorized under the 2017 MS4 Permit.

1.2 MS4 Program Requirements

This permit requires each regulated community to submit a Notice of Intent (NOI) briefly outlining how it will meet the six Minimum Control Measures (MCMs) and impaired waters requirements of the permit and requesting authorization to discharge under the new permit. These six MCMs include the following:

1. Public Education and Outreach;
2. Public Involvement and Participation;
3. Illicit Discharge Detection and Elimination Program;

4. Construction Site Stormwater Runoff Control;
5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management); and
6. Good Housekeeping and Pollution Prevention for Permittee Owned Operations.

Permittees must also address water quality impacts from waterbodies with approved Total Maximum Daily Loads (TMDLs) and certain impairments, generally known as water quality limited waterbodies.

As required by the 2017 MS4 Permit, The City of Manchester submitted a NOI and required accompanying information, including endangered species, historic preservation, and an outfall map to EPA Region 1 by the September 29, 2018 deadline (**Appendix A**) requesting authorization to discharge under the new permit. Manchester received official authorization to discharge stormwater from its MS4 on May 14, 2019. Authorization to discharge expires on June 30, 2023.

This Stormwater Management Program (SWMP) Plan has been developed by the City of Manchester to detail the activities and measures outlined in the NOI to address the requirements of the 2017 MS4 Permit. This SWMP Plan documents Best Management Practices (BMPs), plans, activities, and measures that have been implemented to date, those that are ongoing, and those proposed for the future to comply with the 2017 NHMS4 Permit. This is a “living” document and will be updated and/or modified as required during the permit term as the permittee's activities are modified, changed or updated to meet permit conditions. The plan has been organized to allow these updates to primarily occur within the appendices.

1.3 Regulated Area

Requirements of the 2017 MS4 Permit are limited to a regulated area, defined as the City’s Urbanized Area (UA) which generally constitute the largest and most dense areas of settlement in a region. The Bureau of the Census determines UAs by applying a detailed set of published UA criteria to the latest decennial census data. Although the full UA definition is complex, the Bureau of the Census’ general definition of a UA, based on population and population density, is provided below:

“An urbanized area (UA) is a densely settled core of census tracts and/or census blocks that have population of at least 50,000, along with adjacent territory containing non-residential urban land uses as well as territory with low population density included to link outlying densely settled territory with the densely settled core. It is a calculation used by the Bureau of the Census to determine the geographic boundaries of the most heavily developed and dense urban areas.”

The MS4 permit regulates UA areas based on both the 2000 and 2010 Census (see map in **Appendix B**). Thus, areas that are identified as non-urbanized under the 2010 Census but urbanized under the 2000 Census are still regulated areas. In short, the regulated UA cannot shrink and can only expand. The UA is subject to change every ten years based on the application of the Census definition, thus a larger area may be covered in the future. In Manchester, 91% (by land area) of the city is considered inside the UA and is regulated under the 2017 Permit.

1.4 How to Use this Plan

For the purposes of the 2017 MS4 Permit and ease of use, the City's SWMP encompasses three separate written documents:

1. SWMP Plan (this document);
2. Illicit Discharge Detection and Elimination (IDDE) Plan; and
3. Operation and Maintenance (O&M) Plan.

Both the IDDE Plan and Facilities Operation and Maintenance Plan are prepared as separate standalone documents to this SWMP Plan. This SWMP plan is divided into several sections and includes the following components:

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|------------------|--|
| Section 2 | City Characteristics – Section 2 provides an overview of relevant characteristics, focusing on those aspects related to stormwater runoff and the water quality of surface waters. |
| Section 3 | MCM 1: Public Education and Outreach – Regulated operators of MS4s are required to implement a public education program. Section 3 discusses activities to comply with this measure. |
| Section 4 | MCM 2: Public Participation and Involvement – Regulated MS4s are required to obtain public participation throughout the stormwater management program. Section 4 discusses activities to comply with this measure. |
| Section 5 | MCM 3: Illicit Discharge, Detection, and Elimination – Regulated MS4s must develop and implement an illicit discharge detection and elimination program and develop a regulation to prohibit illicit discharges to the storm drain system. Section 5 discusses activities to comply with this measure. A separate standalone IDDE Plan has also been prepared. |
| Section 6 | MCM 4: Construction Site Stormwater Runoff Control – Regulated MS4s are required to implement and enforce a program to reduce pollutants in stormwater runoff from construction activities that disturb one or more acres. This requires the development of a local regulation requiring implementation of proper erosion and sediment controls. Permittees are also responsible for inspections and enforcement. Section 6 discusses activities to comply with this measure. |
| Section 7 | MCM 5: Stormwater Management in New Development and Redevelopment – Regulated MS4s are required to develop and enforce a regulation requiring implementation of post-construction runoff controls at sites where construction activities disturb one or more acres. The controls must be designed to treat stormwater runoff from post-development sites and must be maintained over the long-term. Section 7 discusses activities to comply with this measure. |

- Section 8** **MCM 6: Good Housekeeping and Pollution Prevention** – Regulated MS4s must review their infrastructure operations and those at specific facilities and make improvements where needed to minimize pollution to stormwater runoff. Operations and maintenance (O&M) procedures must be documented in writing. Section 8 discusses activities to comply with this measure. A separate standalone O&M Plan has also been prepared.
- Section 9** **TMDL and Impaired Waters Controls** – Regulated MS4s are required to evaluate and address stormwater contributions to impaired waters. Section 9 discusses activities to comply with this measure.
- Section 10** **Annual Reporting** – Section 10 provides a summary of annual reporting requirements in order to meet the 2017 MS4 Permit.
- Section 11** **Implementation of Best Management Practices** – Section 11 provides a summary of proposed BMPs outlined in Sections 3 through 9 in a concise format for easy reference.

1.5 Program Responsibilities

This plan is intended to be used by City of Manchester staff whose job involves administering the MS4 permit and associated requirements. The City’s MS4 program will be headed by the Environmental Protection Division (EPD) under the following personnel (**Table 1-1**):

Table 1-1. MS4 Responsible Personnel

Name	Title, Department	Contact
Frederick McNeill	Chief Engineer (EPD)	(603) 624-6341 fmcneill@manchesternh.gov
Ben Lundsted	Environmental Permits Program Coordinator	(603) 624-6527 blundsted@manchesternh.gov

The EPD will work with other departments and divisions in the City to implement the MS4 program. **Table 1-2** provides a list of responsible departments and their general responsibilities within the MS4 program. The responsible person is the most senior person (e.g., department head, administrator, senior elected official, etc.) within each department listed below. The names of the responsible personnel are not provided so as to avoid the plan frequently becoming out of date due to changes in personnel and positions.

Table 1-2. Program Responsibilities

Department / Division	General Responsibilities
Department of Public Works – EPD	Program oversight; public education and outreach; public involvement and participation; SSO inventory; mapping; IDDE program development; IDDE training; dry weather screening of outfalls; catchment investigations; wet weather screening; written procedures for erosion/sediment control, site plan review, inspections, long-term operation and maintenance, and as-built submittal; identification of properties to reduce impervious area; report assessing local regulations for green infrastructure and low impact development; regulatory updates; O&M procedures; inspection and maintenance of treatment structures; SWPPPs; meeting TMDL and impaired waters requirements
Department of Public Works – Highway	Street sweeping; O&M procedures; inspection and maintenance of treatment structures; SWPPPs; meeting TMDL and impaired waters requirements;
Department of Public Works – Facilities	Inspection and maintenance of treatment structures; O&M procedures; SWPPPs; meeting TMDL and impaired waters requirements
Department of Public Works – Parks, Recreation and Cemeteries Division	O&M procedures; SWPPPs; meeting TMDL and impaired waters requirements
Planning Department	Written procedures for erosion/sediment control, site plan review, inspections, long-term operation and maintenance, and as-built submittal; identification of properties to reduce impervious area; report assessing local regulations for green infrastructure and low impact development; regulatory updates; meeting TMDL and impaired waters requirements
Health Department	Meeting TMDL and impaired waters requirements
Information Technology	Public education and participation
Schools	Public education

2 City Characteristics

This section provides some background information on the City of Manchester, useful in understanding the City's characteristics and resources to develop a tailored Stormwater Management Plan. City characteristics are described below. Relevant maps of Manchester including land use and urbanized areas are provided in **Appendix B**.

2.1 Land Use

The City is developed with a mix of residential, commercial, and industrial uses as shown in **Appendix B** and **Table 2-1**. The education program will target each of these audiences, as well as developers.

Table 2-1. Land Use within the Urbanized Area

Land Use	Acres	Percent
Residential/Commercial/Industrial	11,227	55%
Agriculture	783	4%
Forested	4,167	21%
Water	785	4%
Wetland	475	2%
Disturbed Land	27	1%
Other Cleared Land	2,569	13%
Total	20,278	100%

2.2 303(d)-Listed and Priority Waterbodies

The ultimate goal of this Stormwater Management Plan is to outline a program to effectively maintain the City's stormwater infrastructure and to improve the water quality of receiving waters (waters which receive stormwater discharges from the MS4) in compliance with the 2017 MS4 Permit. Impaired waters are those surface waters identified by the NHDES as priority waters that do not meet water quality criteria. As part of the 2017 MS4 Permit, communities must implement BMPs to address waters with an approved Total Maximum Daily Load (TMDL) as of the issuance date of the permit (January 18, 2017) and to address water quality limited waters, including but not limited to waters listed in categories 5 or 4b on the most recent EPA-approved New Hampshire Clean Water Act section 303(d) list or New Hampshire Integrated Report under Clean Water Act section 305(b). Table 2-2 lists the impaired waters for which Manchester must meet MS4 permit requirements based on the 2016 303(d) list. These waters are shown in **Appendix C**. Manchester will

review changes as new lists are published and record these changes and any new permit requirements in **Appendix C**.

Table 2-2. Impaired Waters Based on the 2016 303(d) List

Waterbody Name	Segment ID and Category		Impairment(s)	Approved TMDL
Namaske Lake	NHLAK700060607-02	5	Chlorophyll	
		5	Phosphorous	
		5	pH	
		4	<i>E. coli</i>	9/21/2010
		4	Non-native aquatic plants	
Pine Island Pond	NHLAK700060703-04	5	pH	
		4	Chlorophyll	5/12/2011
		4	Cyanobacteria	5/12/2011
		4	Dissolved oxygen	5/12/2011
Dorrs Pond	NHLAK700060802-01	5	Chloride	
		4	Chlorophyll	5/12/2011
		4	Dissolved oxygen	5/12/2011
		4	Phosphorous	5/12/2011
Stevens Pond	NHLAK700060803-02	5	Chloride	
		4	Chlorophyll	5/12/2011
		4	Dissolved oxygen	5/12/2011
		4	pH	9/20/2007
Merrimack River-Amoskeag Dam	NHIMP7000600802-04	4	<i>E. coli</i>	9/21/2010
Dorrs Pond Inlet Brook	NHRIV700060802-13	5	Chloride	
Dorrs Pond- E Inlet	NHRIV700060802-16	5	Chloride	
Humphrey Brook	NHRIV700060803-15	5	Chloride	
Little Cohas-Unnamed Brook	NHRIV700060804-05	5	Benthic-macroinvertebrates	
		5	Chloride	
		5	Iron	
		5	Dissolved oxygen	
		5	pH	

Waterbody Name	Segment ID and Category		Impairment(s)	Approved TMDL
Baker Brook	NHRIV700060803-08	5	Chloride	
Black Brook	NHRIV700060801-05-02	5	Benthic-macroinvertebrates	
		5	pH	
Black Brook-Hardy Brook	NHRIV700060801-05-01	5	Lead	
		5	Dissolved oxygen	
		5	pH	
Cohas Brook	NHRIV700060703-08	5	pH	
Cohas Brook	NHRIV700060703-09	4	<i>E. coli</i>	9/21/2010
Cohas Brook- Long Pond Brook	NHRIV700060703-05	5	Benthic-macroinvertebrates	
		5	pH	
		4	<i>E. coli</i>	9/21/2010
		4	Stream habitat assessment	
Merrimack River	NHRIV700060804-11	4	<i>E. coli</i>	9/21/2010
Piscataquog River	NHRIV700060607-22	5	pH	
		5	<i>E. coli</i>	
Rays Brook	NHRIV700060802-15	5	Chloride	
		4	<i>E. coli</i>	8/29/2011
Saint Anslem Brook- To Piscataquog River	NHRIV700060607-35	5	Dissolved oxygen	
		5	pH	
		5	<i>E. coli</i>	
South Perimeter Brook	NHRIV700060804-12	5	Chloride	
		5	Iron	
McQuesten Brook	NHRIV700060803-16	5	<i>E. coli</i>	
Merrimack River	NHRIV700060803-14-02	5	Aluminum	
		5	pH	
		4	<i>E. coli</i>	9/21/2010
Nutt Pond	NHLAK700060803-01	5	Chloride	
		5	pH	
		4	Chlorophyll	5/12/2011

Waterbody Name	Segment ID and Category		Impairment(s)	Approved TMDL
		4	Non-native aquatic plants	
		4	Phosphorous	5/12/2011
Crystal Lake- Town Beach	NHLAK700060703-02-02	4	<i>E. coli</i>	9/21/2010

Note: The “TMDL for 158 Acid Impaired Ponds and 21 Aluminum Impaired Lakes” and the “Northeast Regional Mercury TMDL” do not specify waste load allocations or other requirements either individually or categorically for the MS4 discharges and specify that load reductions are to be achieved through reduction in atmospheric deposition sources. Mercury impaired waters have been excluded from Table 2-2.

Requirements for TMDL and water quality limited waterbodies, specifically bacteria, phosphorus, lead, iron and chloride, are outlined in **Section 9**.

2.3 Endangered Species Act Determination

To be eligible to discharge stormwater under the 2017 MS4 Permit, the City of Manchester must certify that its stormwater system is not impacting federally listed rare or endangered species habitat or other critical environmental locations. This was completed in summer of 2018 as meeting “Criterion C” on the NOI with the results also documented in the NOI (**Appendix A**). As shown in the NOI, two species were found to exist within the MS4 regulated area: Northern Long-eared Bat and the Small-Whorled Pogonia. It is believed that current stormwater discharges will have no effect on the species listed.

2.4 National Historic Preservation Act Determination

Regulated MS4s must also evaluate whether its discharges have the potential to affect historic properties. If there have been no relevant changes in existing discharges since the 2003 MS4 General Permit, the discharge can still be considered to have no potential to have an effect on historic properties. This has been documented as “Criterion A” on the Notice of Intent (**Appendix A**).

Where there is disturbance of land through the construction and/or installation of control measures, there is a possibility that artifacts, records, or remains associated with historic properties could be impacted. In these cases, such as during future construction of structural stormwater BMPs, the City will ensure that historic properties will not be impacted by their activities, or that they are in compliance with a written agreement with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO), or other tribal representative that outlines all measures the applicant will carry out to mitigate or prevent any adverse effects on historic properties. This will be completed as required.

3 MCM 1: Public Education and Outreach

3.1 Summary of Permit Requirements

3.1.1 Core Permit Requirements

Under MCM 1, permittees must develop an educational program, define educational goals, express specific messages, define the targeted audience for each message, and identify responsible parties for program implementation. At a minimum, the program must provide information concerning the impact of stormwater discharges on water bodies within the community, especially those waters that are impaired or identified as priority waters. The program must identify steps and/or activities that the public can take to reduce the pollutants in stormwater runoff and their impacts to the environment.

Permittees must address four core target audiences, unless one of these audiences is not present in the MS4 community. The targeted audiences and educational topics requiring consideration under the permit are outlined below:

1. Residents
 - Effects of outdoor activities such as lawn care (use of pesticides, herbicides, and fertilizers) on water quality;
 - Benefits of appropriate on-site infiltration of stormwater;
 - Effects of automotive work and car washing on water quality;
 - Proper disposal of swimming pool water;
 - Proper management of pet waste; and
 - Maintenance of septic systems.
2. Businesses, Institutions (churches, hospitals) and Commercial facilities
 - Proper lawn maintenance (use of pesticides, herbicides and fertilizer);
 - Benefits of appropriate on-site infiltration of stormwater;
 - Building maintenance and storage of materials;
 - Proper use and storage of salt or other de-icing and anti-icing materials;
 - Proper management of waste materials and dumpsters;
 - Proper management of parking lot surfaces;
 - Proper car care activities; and

- Proper disposal of swimming pool water by entities such as motels, hotels, and health and country clubs.
3. Developers and Construction
- Proper sediment and erosion control management practices;
 - Information about Low Impact Development (LID) principles and technologies; and
 - Information about EPA's construction general permit (CGP).
4. Industrial facilities
- Equipment inspection and maintenance;
 - Proper storage of industrial materials (emphasizing pollution prevention);
 - Proper management of dumpsters;
 - Minimization of use of salt or other de-icing/anti-icing materials;
 - Proper storage of salt or other de-icing/anti-icing materials;
 - Benefits of appropriate on-site infiltration of stormwater runoff from areas with low exposure to industrial materials such as roofs or employee parking;
 - Proper maintenance of parking lot surfaces (sweeping); and
 - Requirements for coverage under EPA's MSGP.

At least two educational messages must be distributed to each audience listed above over the permit term spaced at least a year apart.

3.1.2 TMDL & Impaired Waters Requirements

Public education and outreach programs must also address impaired waterbodies. Impaired waterbodies are provided in **Table 2-1** (see Figure in **Appendix C**), with updates provided in **Appendix C** as they become available. As outlined in **Table 2-1**, Manchester has waterbodies impaired for bacteria, phosphorus, chlorides and metals. Therefore, relevant public information on bacteria and phosphorus topics as outlined in the 2017 MS4 Permit, and summarized below, will be included within the education program.

Bacteria TMDL and Impaired Waterbody Requirements (Residents)

- Annual message encouraging the proper management of pet waste, including noting any existing bylaws where appropriate
- Disseminate educational materials to dog owners at the time of the issuance or renewal of a dog license
- Describe detrimental impacts of improper pet waste management, requirements for waste collection and disposal, and penalties for non-compliance

- Provide information to owners of septic systems about proper maintenance

Phosphorus Impaired Waterbody Requirements (Residents & Businesses)

- Spring (April/May): encourage the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorus-free fertilizers
- Summer (June/July): encourage the proper management of pet waste, including noting any existing ordinances where appropriate
- Fall (August/September/October): encourage the proper disposal of leaf litter.

These items have been incorporated into future public education outreach components as described in Section 3. Additional requirements will be outlined in **Appendix C** as needed if additional impairments are identified in future approved versions of the EPA-approved New Hampshire Clean Water Act section 303(d) list or New Hampshire Integrated Report under Clean Water Act section 305(b).

3.2 Past Public Education Program

In response to requirements under the 2003 permit, Manchester has enacted a multifaceted approach to stormwater public education and outreach. The following summarizes Manchester’s past public education activities:

- **Stormwater Coordinator** – An Environmental Permits Coordinator was hired on May 17, 2003.
- **Stormwater Information on City’s Website** – The website has been updated and maintained since October 2003.
- **Outreach with Local Watershed Organizations** –
 - The City has provided funds and supplies for 10 kiosks, equipment and water analyses for the two primary watershed organizations (Crystal Lake Preservation and the Pine Island Pond Environmental Society).
 - The City coordinates with the watershed organizations to conduct total phosphorus analysis under the NH Volunteer Lake Assessment Program.
 - The City has worked as a project partner with the New Hampshire Rivers Council on the McQuesten Brook Watershed Management Plan and implementation efforts.
 - In 2017, the City participated in a NH PBS documentary entitled “Water Works.”
- **Stormwater Flyers** – The City has continued to distribute previously developed brochures to the public and has developed and printed brochures explaining the “Wastewater Treatment Process” when visiting classrooms to teach students.
- **Stormwater Stenciling** – EPD has partnered with the NH Institute of Art for a stormwater stenciling campaign on their campus.
- **Urban Signage** – Previously installed signs are updated and maintained annually.

- **Pet Waste Brochures** – Brochures distributed to owners of newly registered dogs.
- **Pet Waste Signage at Parks** – Signage provided at urban ponds and City Parks for collecting pet waste and some signage indicating it is improper to feed the ducks.
- **School-Based Education Program** –
 - EPD conducts tours of the WWTP and educates students on wastewater and stormwater.
 - EPD participates in Science Fair judging hosted by Manchester Water Works.

3.3 Ongoing Public Education Program

Tables 3-1 through 3-4 outline Manchester’s public education program, by targeted audience, to meet the requirements of the 2017 MS4 Permit. The measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 3-1. Residential Outreach Program

BMP Materials/Distribution	BMP Topic Description
Varying promotional materials that may include brochures/pamphlets, website, signage, and press releases.	Distribute seasonal information using the NH Stormwater Coalition outreach materials and framework. <ul style="list-style-type: none"> • <u>Spring</u> – fertilizer and grass clippings. • <u>Summer</u> – pet waste management. • <u>Fall</u> – disposal of leaf litter.
Website	Incorporate information on lawn care, infiltration, automotive maintenance, and car washing into the existing website. The website will be updated continuously with seasonally-specific information.

Note: Many of the above topics will be made available continuously via brochures and the website. Information pertaining to the bacteria and phosphorus seasonal messages will be made available on the website continuously with notes provided for the appropriate timeframes for implementing certain topics.

Table 3-2. Businesses, Institutions, and Commercial Outreach Program

BMP Materials/Distribution	BMP Topic Description
Varying promotional materials that may include brochures/pamphlets, website, signage, and press releases.	Distribute seasonal information using the NH Stormwater Coalition outreach materials and framework. <ul style="list-style-type: none"> • <u>Spring</u> – fertilizer and grass clippings. • <u>Summer</u> – pet waste management. • <u>Fall</u> – disposal of leaf litter.
Website	Incorporate information on lawn care, infiltration, building maintenance, salt use and storage, material and waste management and storage, and parking lot maintenance into the existing website.

Table 3-3. Developers and Construction Outreach Program

BMP	BMP Description
Brochures/pamphlets	Distribute information on sediment and erosion control management, LID, and CGP in City Hall using NH Stormwater Coalition outreach materials.
Website	Incorporate information on sediment and erosion control management, LID and CGP on website with application materials.

Note: All informational topics will be addressed on the City’s website and via erosion control and fact sheets provided to developers when applying for applicable permits. Information pertaining to the Developers and Construction will be made available continuously.

Table 3-4. Industrial Outreach Program

BMP	BMP Description
Brochures/pamphlets	Distribute information on equipment inspection and maintenance, material storage, waste management, salt use and storage, infiltration parking lot maintenance and MSGP through the City's Industrial Pretreatment Program (IPP) and at the City Hall.
Website	Incorporate information on equipment inspection and maintenance, material storage, waste management, salt use and storage, infiltration parking lot maintenance and MSGP on website.

Note: All informational topics will be addressed on the City's website and brochures at the City Hall.

4 MCM 2: Public Participation and Involvement

4.1 Summary of Permit Requirements

Under MCM 2, permittees must provide annual opportunities for public participation in the review and implementation of the City's SWMP as part of a public education and involvement program. Opportunities vary, but can include websites, disposal events, watershed cleanups, and advisory committees. All public involvement activities must comply with state public notice requirements. The SWMP and annual reports must also be made available so that the public has opportunities to review and comment.

4.2 Past Public Participation and Involvement Opportunities

The City of Manchester provides multiple public participation and involvement opportunities throughout the year. The following summarizes Manchester's past public participation activities:

- **Annual Household Hazardous Waste Collection Event** – The City provides Household Hazardous Waste Collection Events twice per year. Collection occurs on the second Saturday of May and October. The date of collection is added to the City's website, announced on flyers at the Highway Department and kiosks throughout the City, and announced in the newspaper.
- **Collect Used Oil and Tires** – The City collects used oil, and tires during normal business hours and does not reserve these for Household Hazardous Waste Day.
- **Green Roof Sampling** – EPD conducts sampling for heavy metals on previously installed green roofs annually.
- **Stormwater and CSO Hotline** – The City has provided a hotline number on the City's stormwater website and the Environmental Permits Coordinator's business cards, but may discontinue it in the future.

4.3 Ongoing Public Participation and Involvement Opportunities

Manchester will make this written SWMP and annual reports available for review and comment via the City's website, along with the name, email address and/or phone number of a contact person from the City government to request additional information or submit comments. This will allow the public to comment on the program at least once per year. An updated SWMP will be posted to the website as additional tasks are completed. **Table 4-1** summarizes the proposed Public Participation and

Involvement Opportunities BMPs. The measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 4-1. Public Participation and Involvement Program

BMP	BMP Description
Public Review	<ul style="list-style-type: none">• The SWMP will be posted on the City website for public review.• The SWMP will be reviewed annually and updated/revised as necessary.
Public Participation	<ul style="list-style-type: none">• The SWMP will be presented or communicated by a to the public with opportunity for comment.• Meeting minutes will record public comments.

5 MCM 3: Illicit Discharge, Detection, and Elimination

5.1 Summary of Permit Requirements

Under MCM 3, permittees must implement an IDDE program to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges. An “illicit discharge” is any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire-fighting activities. A summary of the required IDDE activities and timelines are provided below.

- **Legal Authority** – The IDDE program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to prohibit, investigate, and eliminate illicit discharges. For permittees authorized by the MS4-2003 permit such as Manchester, the ordinance, by-law, or other regulatory mechanism was required to be effective by May 1, 2008.
- **Sanitary Sewer Overflow** – The 2017 MS4 Permit requires municipalities to prohibit illicit discharges, including SSOs, to the separate storm sewer system. SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism.

Regulated communities must identify all known locations where sanitary sewer overflows (SSOs) have discharged to the MS4 within the previous 5-years. Permittees must also develop an inventory within 1-year of the effective date and update it annually. Upon detection of an SSO, the permittee must eliminate it as quickly as possible and take interim mitigation measures to minimize or eliminate the discharge of pollutants until remediation work is complete.

- **System Mapping** – Regulated communities must complete a comprehensive map of their stormwater system in two phases. Phase 1 must be completed within two years and include infrastructure such as outfalls and preliminary catchment delineations, waterbodies, open channel conveyances, interconnections with other MS4s, and structural stormwater BMPs. Phase 2 must be completed within ten years and include information such as outfalls with high accuracy GPS location and refined catchment delineations, catch basins, manholes, pipe connectivity, and sanitary or combined sewer systems as available/applicable.
- **Written Illicit Discharge, Detection, and Elimination Plan** – The 2017 MS4 Permit requires preparation of a comprehensive written IDDE Program or IDDE Plan that provides detailed procedures for assessment and priority ranking of outfalls and interconnections, dry and wet weather outfall sampling, catchment investigations procedures, system vulnerability factor

(SVF) assessment, identification of an illicit discharge, illicit discharge removal, and ongoing screening requirements. The City has prepared a standalone IDDE Plan separate from this SWMP Plan.

- **Annual IDDE Training** – The 2017 MS4 Permit requires annual IDDE training to be provided to all employees involved in the IDDE program. Training will, at a minimum, include information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDE program.
- **Additional TMDL Requirements** – As Manchester must also adhere to additional permit requirements for those waterbodies with a Bacteria TMDL, the IDDE program must designate catchments draining to bacteria or pathogen impaired segments as “Problem Catchments” or “HIGH” priority.

5.2 Past IDDE Program

The City of Manchester has conducted multiple efforts to identify and eliminate illicit discharges under the previous permit. The following summarizes Manchester’s past IDDE program activities:

- **Legal Authority** – The City’s Stormwater Ordinance was approved in 2006. The ordinance provides the City with the legal authority to prohibit, investigate and enforce illicit discharges. A copy of the ordinance and regulations are located in the IDDE plan and in **Appendix D**.
- **IDDE Program – Dry Weather Outfall Screening** – The City catalogued observable outfalls along the Merrimack and Piscataquog River and the ponds. Samples were collected in dry weather (where applicable). Follow-up investigations were conducted if necessary.
- **Map Outfalls and Receiving Waters** – In 2016, EPD purchased a tablet linked to the City’s GIS system to assist with tracking the cleaning of lines and to determine potential locations for illicit discharges. 100% of the outfall map is complete (**Appendix E**).

5.3 Ongoing IDDE Program

Manchester has conducted multiple activities to identify illicit discharges. A separate written IDDE plan is available and outlines legal authority, program responsibilities, ranks catchment areas, and outlines procedures for investigation and removal in accordance with the permit. This written plan will be updated and refined as needed to incorporate findings of field investigations. **Table 5-1** summarizes Manchester’s plan to meet requirements of the 2017 MS4 Permit to implement an IDDE program to locate, eliminate, and prohibit illicit discharges. The measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 5-1. Illicit Discharge Detection and Elimination Program

BMP	BMP Description
Sanitary Sewer Overflow (SSO) Inventory	An ongoing inventory of all SSOs from the previous five years has been developed and is included within the separate IDDE Plan. The inventory includes all SSOs discharging to the MS4 or directly to surface waters, start and end dates/times of the events, date/time reported, the estimated volume of flow from the SSO, the cause of the overflow, mitigation, and any planned follow-up actions.
Storm sewer system map	Manchester has completed a map of the storm sewer system. The map will be updated through the permit term as new information becomes available. The storm sewer system map is located in Appendix E .
Written IDDE program development	A written IDDE program has been developed as a separate document from this SWMP.
Implement IDDE program	The IDDE program will be implemented following the IDDE plan. All illicit discharges will be documented and follow-up catchment investigations will be conducted.
Employee training	Manchester provides training to all staff involved in any aspect of stormwater management. The EPD focuses on informal field O&M training for field crews. Specific IDDE training for employees will be conducted.
Conduct dry weather screening	Manchester will conduct dry weather screening in accordance with outfall screening procedures and permit conditions as outlined in the IDDE Plan.
Conduct wet weather screening	Manchester will conduct wet weather screening in accordance with screening procedures as outlined in the IDDE Plan.
Ongoing screening	Manchester will conduct dry weather and wet weather screening (as necessary) as outlined in the IDDE Plan.

6 MCM 4:

Construction Site Stormwater Runoff Control

6.1 Summary of Permit Requirements

Under MCM 4, permittees are required to implement and enforce a program to reduce pollutants in stormwater runoff discharged to the MS4 from all construction activities that result in a land disturbance of greater than or equal to one acre within the regulated area. This program shall also regulate disturbances less than one acre if they are part of a larger common plan of development or sale that would disturb one or more acres. A summary of the required Construction Site Stormwater Runoff Control Program activities and timelines are provided below:

- **Legal Authority** – The Construction Site Stormwater Runoff Control Program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to:

- Require the use of sediment and erosion control practices at construction sites; and
- Include controls for other wastes on construction sites.

For permittees authorized by the 2003 MS4 permit such as Manchester, the ordinance, by-law, or other regulatory mechanism was required to be effective by May 1, 2008.

- **Construction Site Stormwater Runoff Control Program** – The 2017 MS4 Permit requires preparation of written Construction Site Stormwater Runoff Control Program procedures that includes pre-construction site plan review and onsite construction inspections and should also include requirements for controlling other wastes during construction. This program includes the following:

- Establish written procedures for pre-construction plan review of the site design, planned operations, planned BMPs during the construction phase, and planned BMPs to manage runoff after development that includes potential water quality impacts, consideration of information submitted by the public, and evaluation of opportunities for use of LID and green infrastructure (GI).
- Develop written procedures for site inspections and enforcement actions to take place both during construction of BMPs and after construction of BMPs is completed to ensure they are working as described in the approved plans. Procedures must define the following:
 - Person responsible for site inspections;
 - Qualifications necessary to perform inspections;
 - Who has authority to implement enforcement procedures;
 - Ability to impose sanctions to ensure program compliance;
 - The use of standardized inspection forms (if appropriate); and

- How to track the number inspections and enforcement actions for reporting in the Annual Report.
- Establish requirements for construction site operators performing land disturbance activities within the MS4 jurisdiction that result in stormwater discharges to the MS4 to implement a sediment and erosion control program that includes BMPs appropriate for the conditions at the construction site. Examples of sediment and erosion control measures for construction sites include local requirements to:
 - Minimize the amount of disturbed area and protect natural resources;
 - Stabilize sites when projects are complete or operations have temporarily ceased;
 - Protect slopes on the construction site;
 - Protect all storm drain inlets and armor all newly constructed outlets;
 - Use perimeter controls at the site;
 - Stabilize construction site entrances and exits to prevent off-site tracking;
 - Inspect stormwater controls at consistent intervals.

6.2 Past Construction Site Stormwater Runoff Control Program

The City of Manchester has completed multiple measures to satisfy construction site stormwater runoff requirements. The following summarizes Manchester's past Construction Site Stormwater Runoff Control Program activities:

- **Develop an Ordinance to Require Erosion and Sediment Control Plans** – A Stormwater Ordinance and supporting regulations were adopted in August 2006. These documents promote compliance at construction sites with subsequent enforcement capability should the contractor neglect Stormwater Pollution Prevention Plan requirements.
- **Develop Procedures for Receipt and Consideration of Public Comment** – The City continues to follow the public comment response protocols used to address comments for the Stormwater Ordinance.
- **Develop Checklist for Erosion Control Measures and Construction Material Management and Onsite Inspections** – The City developed an inspection checklist for site visits that includes information regarding the site, weather conditions since the last inspection, and the conditions of BMPs.

6.3 Ongoing Construction Site Stormwater Runoff Control Program

Table 6-1 outlines Manchester’s plan to meet the requirements of the 2017 MS4 Permit to establish a Construction Site Stormwater Runoff Control Program. The measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 6-1. Construction Site Stormwater Runoff Control Program

BMP	BMP Description
Site inspection and enforcement of Erosion Sediment Control (ESC) measures.	Manchester has an existing Stormwater Ordinance and Regulations that outline site inspections and enforcement procedures. The City previously developed an inspection checklist for site visits that includes information regarding the site, weather conditions since the last inspection, and the conditions of BMPs. The existing written procedures and inspection checklist were reviewed for completeness and compliance with the permit. The checklist and the review are available in Appendix D .
Site Plan Review	The City has reviewed its current regulations and process for site plan review. The review outlines existing written procedures for site plan review and is included in Appendix D .
Erosion and sediment control	Manchester has an existing Stormwater Ordinance and Regulations that require construction operators to develop and implement a sediment and erosion control plan in the form of a Storm Water Pollution Prevention Plan (SWPPP) as required under the 2017 MS4 Permit. The review of regulations and how they satisfy the 2017 MS4 Permit requirements for an ordinance/regulation is included in Appendix D .
Waste control	The City has reviewed its existing Stormwater Ordinance and Regulations, which include requirements to control wastes. The review is included in Appendix D .

7 MCM 5: Stormwater Management in New Development and Redevelopment

7.1 Summary of Permit Requirements

Under MCM 5, permittees shall develop, implement, and enforce a program to address post-construction stormwater runoff from new development and redevelopment sites that disturb one or more acres and discharge into an MS4 system. This program shall also regulate disturbances less than one acre if they are part of a larger common plan of development or sale that would disturb one or more acres. A summary of the required Stormwater Management in New Development and Redevelopment, also known as Post Construction Stormwater Management, activities and timelines are provided below:

- **Legal Authority** – The Post Construction Stormwater Management Program shall include adequate legal authority in the form of a currently effective ordinance, bylaw, or other regulatory mechanism to:
 - Require LID site planning and design strategies;
 - Meet many of the requirements of the NHDES published guidance and associated stormwater standards;
 - Incorporate runoff volume storage and/or pollutant removal requirements; and
 - Include controls for other wastes on construction sites.

Updates must be made within two years of the effective permit date.

- **As-built Submittals** – The permittee must require the submission of as-built drawings within two years after completion of construction projects. Drawings must include structural and non-structural stormwater site controls designed to manage stormwater.
- **Operation and Maintenance** – The Post Construction Stormwater Management Program shall include procedures to ensure adequate long-term operation and maintenance of BMPs are established after completion of a construction project, along with a dedicated funding source within two years of the effective permit date.
- **Regulatory Assessment** – The permittee must complete an assessment of existing regulations that could affect creation of impervious cover to determine if changes to the current design standards are required to support LID. Any required changes to reduce mandatory creation of impervious cover in support of LID should be made within four years of the effective permit date.

Additionally, the permittee must complete a report to assess current regulations to ensure that green roofs, infiltration practices, porous/pervious pavement, and water harvesting/storage

devices are allowable where feasible. Any required changes to allow for these BMPs must be completed within four years of the effective permit date.

- **Inventory of Potential Retrofit Sites** – The permittee must complete an inventory within four years of the effective permit date to determine at least five permittee-owned properties that could be modified or retrofitted with structural stormwater BMP improvements. The inventory should at least include municipal properties with significant impervious cover, and ideally allow opportunities for public use and education.
- **Additional Requirements for Water Quality Limited Waters** – Manchester must also adhere to requirements in Appendix H of the 2017 MS4 Permit for Water Quality Limited Waters. The additional requirements relevant to Manchester include the following:
 - *Phosphorus* – The requirement for adoption/amendment of the permittee’s ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management BMPs be optimized for phosphorus removal. Additionally, the retrofit inventory and priority ranking of potential retrofit sites described above shall include consideration of BMPs to reduce phosphorus discharges.
 - *Metals* – Stormwater management systems designed on commercial and industrial land use area draining to the water quality limited waterbody shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event. EPA also encourages the permittee to require any stormwater management system designed to infiltrate stormwater on commercial or industrial sites to provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration as calculated using the methodologies contained in the EPA document: Stormwater Best Management Practices (BMP) Performance Analysis (2010). of the same volume of runoff to be infiltrated, prior to infiltration.

7.2 Past Post Construction Stormwater Management

The City of Manchester has established some measures for post construction stormwater management. The following summarizes Manchester’s past Post-Construction Site Stormwater Management Program activities:

- **Legal Authority** – Manchester requires construction of stormwater runoff controls under its Subdivision and Site Plan Review Regulations and Department of Highway’s Standard Specifications for Road, Drain, and Sewer Construction and Storm Water Regulations. The Stormwater Regulations provide a list of recommended manuals.
- **As-built Submittals** – The Department of Highway’s Storm Water Regulations require the submission of as-built plans and written certification by a registered professional engineer that the structural BMP has been installed in accordance with the approved plan and regulations.
- **Operation and Maintenance** – A Long-Term Maintenance Agreement (LTMA) is required for new developments completed within the City.

7.3 Ongoing Post-Construction Stormwater Management Program

Table 7-1 outlines Manchester’s program to meet the requirements of the 2017 MS4 Permit to establish a Post-Construction Stormwater Management Program. The measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are listed in Section 11.

Table 7-1. Post-Construction Site Stormwater Management Program

BMP	BMP Description
As-built plans for on-site stormwater control	Manchester has reviewed its regulations to determine existing requirements for the submission of as-built plans and long-term O&M of BMPs after construction. This review is included in Appendix D . Recommended updates will be made by the end of Year 2 and included in Appendix D .
Target properties to reduce impervious areas	Manchester will complete an inventory and priority ranking of permittee-owned property and existing infrastructure that could be retrofitted with BMPs designed to reduce the frequency, volume, and pollutant loads of stormwater discharges to its MS4 through the mitigation of impervious area. The inventory and priority ranking will be maintained in Appendix F .
Allow green infrastructure	Manchester will develop a report assessing existing local regulations to determine the feasibility of making green infrastructure practices allowable when appropriate site conditions exist. The report will be included in Appendix D .
Street design and parking lot guidelines	Manchester will develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support LID options. The report will be included in Appendix D .
Ensure any stormwater controls or management practices for new development and redevelopment are consistent with the Southeast Watershed Alliance’s Model Standards for Coastal Watershed Communities OR contain provisions outlined in the 2017 MS4 Permit	Manchester will update its regulatory mechanism to meet permit requirements. The most recent version of regulations will be included in Appendix D .

8 MCM 6: Good Housekeeping and Pollution Prevention

8.1 Summary of Permit Requirements

Under MCM 6, permittees shall develop and implement an operations and maintenance program to reduce stormwater pollution from permittee activities. This includes optimizing existing activities related to parks and open space, buildings and facilities, vehicles and equipment, and stormwater infrastructure maintenance. A summary of the required Good Housekeeping and Pollution Prevention for Permittee Owned Operations activities and timelines is provided below.

8.1.1 Facility Operations and Maintenance Plans

The permittee must complete an inventory of all parks and open space, buildings and facilities where pollutants are exposed to stormwater runoff, and vehicles and equipment within two years of the permit effective date. The inventory must be reviewed annually and updated as necessary. Upon completion, the permittee must establish written procedures as part of a Facilities Operation and Maintenance Plan within two years of the permit effective date for the following items:

Parks and Open Space

- Proper use, storage, and disposal of pesticides, herbicides, and fertilizers;
- Lawn maintenance and landscaping activities to protect water quality, such as reducing mowing, lawn clippings handling, and use of alternative landscaping materials;
- Pet waste handling collection and disposal locations at all locations where pets are permitted, including signage;
- Control of waterfowl in areas where they congregate to reduce waterfowl droppings from entering the MS4s;
- Management of trash containers; and
- Addressing erosion or poor vegetative cover, particularly near a surface waterbody.

Buildings and Facilities

Use, storage, and disposal of petroleum products and other potential pollutants.

- Materials handling training to applicable employees;
- Ensuring that Spill Prevention, Control, and Countermeasures (SPCC) Plans are in place if needed (aboveground petroleum storage greater than 1,320 gallons or underground petroleum storage greater than 42,000 gallons);
- Dumpsters and other waste management equipment; and

- Sweeping parking lots and keep facility areas clean to reduce pollutants in runoff.

Vehicles and Equipment

- Storage of vehicles to prevent fluid leaks to stormwater;
- Fueling area evaluation, including feasibility of fueling under cover; and
- Preventing vehicle wash waters from entering surface waters or the MS4.

8.1.2 Infrastructure Operation and Maintenance Plans

The permittee must establish written procedures as part of an Infrastructure Operation and Maintenance Plan within one year of the permit effective date to ensure that MS4 infrastructure is maintained in a timely manner to reduce the discharge of pollutants from the MS4 for the following items:

Catch Basin Cleaning

- Prioritization of catch basins located near construction activities for more frequent inspection and maintenance;
- Establishing a schedule with a goal that at the time of maintenance, no catch basin is more than 50% full;
- For catch basins that are more than 50% full during two consecutive inspections or cleaning events, methods for investigating the contributing drainage area for sources of excessive sediment loads; and
- Establishing a plan for optimizing catch basin cleaning, inspections, and documentation.

Street Sweeping

- Sweeping all streets and permittee-owned parking lots, with the exception of rural uncurbed roads with no catch basins or high-speed limited access highways at least one per year in the spring following winter sanding events;
- More frequent sweeping of targeted areas based on inspections, land use, or known water quality impacts;
- Increasing street sweeping frequency of all municipal owned streets and parking lots to a minimum of two times per year; once in the spring (following winter activities such as sanding) and at least once in the fall (following leaf fall) for areas that discharge to water quality limited waterbodies and their tributaries where phosphorus is the cause of the impairment. In lieu of a post-leaf drop street sweeping, the permittee may implement a fall leaf litter collection program; and
- Increasing street sweeping to a schedule determined by the permittee to target areas with potential for high pollutant loads for areas that discharge to water quality limited waterbodies and their tributaries where solids, oil and grease, or metals is the cause of impairment.

Catch Basin and Street Sweeping Residuals Management

- Ensure proper storage of catch basins cleanings and street sweepings prior to disposal or reuse such that they do not discharge to receiving waters.

Winter Operation and Maintenance

- Establish and implement procedures for winter road maintenance including the use and storage of salt and sand
- Minimize the use of sodium chloride and other salts and evaluate of opportunities to use alternative materials; and
- Ensure that snow disposal activities do not result in disposal of snow into waters of the United States.

8.1.3 Stormwater Pollution Prevention Plans

The permittee must establish written Stormwater Pollution Prevention Plans for the following permittee-owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater as determined by the permittee. SWPPPs must address a number of components, including the following:

- Pollution Prevention Team;
- Facility description, identification of potential pollutant sources, and identification of stormwater controls;
- Stormwater management practices, including measures to minimize or prevent exposure, good housekeeping and preventative maintenance, spill prevention and response, erosion and sediment control, management of runoff, salt storage, employee training, and control measure maintenance; and
- Procedures for site inspections and sampling.

8.1.4 Stormwater BMP Inspections

The permittee must establish and implement written inspection and maintenance procedures and frequencies for all structural stormwater treatment structures, such as infiltration and detention basins, proprietary stormwater treatment structures, gravel wetlands, etc. All permittee-owned stormwater treatment structures (excluding catch basins) shall be inspected at least annually.

8.1.5 Additional Requirements for Water Quality Limited Waters

Manchester must also adhere to requirements in Appendix H of the 2017 MS4 Permit for Water Quality Limited Waters. The additional requirements relevant to Manchester include the following:

- **Phosphorus** – Establish requirements for use of slow-release and phosphorus-free fertilizers on permittee owned property currently using fertilizer, establish procedures to properly manage grass cuttings and leaf litter on permittee property, and increase street sweeping frequency of all municipal owned streets and parking lots to a minimum of two times per year (spring and fall). In lieu of a fall street sweeping, the permittee may implement a fall leaf litter collection program.
- **Metals** – Increased street sweeping and catch basin cleaning frequency of all municipal owned streets and parking lots to a schedule determined by the permittee to target areas with potential for high pollutant loads. This may include, but is not limited to, increased street sweeping frequency in commercial and industrial areas and high-density residential areas, or drainage areas with a large amount of impervious area. Each annual report shall include the street sweeping schedule determined by the permittee to target high pollutant loads.

8.2 Past Good Housekeeping and Pollution Prevention Program

The City of Manchester has completed a number of existing program measures to satisfy good housekeeping and pollution prevention program requirements. The following summarizes Manchester's past activities:

- **Snow Disposal** – Silt fences are erected around the snow dumping areas in Manchester. The erection of these fences is verified in November and December. Any trash or debris accumulated in the fenced area is removed from the site with the removal of the fence in the spring.
- **Catch Basin Cleaning Program, including Priority Catch Basins** – The City contracts annually to have catch basins cleaned by a private company. Additional catch basins not cleaned by the outside contractor are cleaned by the City. The program ensures that the City's approximately 14,000 catch basins are cleaned on a six-year cycle. A list of priority catch basins adjacent to Urban Ponds was developed and the City inspects those basins annually or semi-annually.
- **Street Sweeping** – The City has two vacuum and three mechanical sweepers. These are employed continually during the spring to cleanup from the winter sanding operations. All City streets are swept a minimum of once a year.
- **Disposal of Catch Basin Cleaning and Street Sweeping Residuals** – The City continues to place street sweeping debris and catch basin debris at the Dunbarton Road Public Works Operation Yard.
- **Salt Usage and Storage** –
 - The salt used for highway treatment is kept under cover at the DPW salt shed.
 - All roads are pretreated with brine made at the DPW. The brine is applied eight hours before a storm.

- In the past, DPW Highway staff who apply salt for the City have been trained under the Green SnowPro Program. This program is no longer offered to municipalities.
- The City was awarded for “Excellence in Snow and Ice Management” by the American Public Works Association in 2018.
- A sub-watershed study of Nutt Pond targeted sand application and sweeping of commercial properties through distribution of a survey and educational materials.
- **Cleaning Select Pond Inlets and Trash Racks** – The City uses an inspection checklist to ensure that BMPs are cleaned annually or semi-annually.
- **BMPs for Urban Ponds** – Manchester has designed and installed several structural stormwater BMPs at its urban ponds to reduce pollutant loads associated with stormwater runoff. This has been coordinated with the Supplemental Environmental Projects Programs (SEPP) requirements. A list of BMPs installed over the years under the SEPP and other Programs is provided in **Appendix G**.
- **BMPs for Derryfield Country Club** – A BMP to reduce the amount of sediment contributed from the Country Club was installed and maintained. Refer to **Appendix G** for a list of stormwater BMPs that have been installed over the years.

8.3 Ongoing Good Housekeeping and Pollution Prevention Program

The following table outlines Manchester’s plans to meet the requirements of the 2017 MS4 Permit to establish a Good Housekeeping and Pollution Prevention Program. The measurable goals, responsible department and schedule for implementation of all BMPs under the SWMP are provided in Section 11.

Table 8-1. Good Housekeeping and Pollution Prevention Program

BMP	BMP Description
O&M procedures	Manchester will create written O&M procedures for parks and open spaces, buildings and facilities, and vehicles and equipment. These will be incorporated into a separate O&M Manual.
Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment	Manchester will create an inventory of all City facilities for incorporation into the O&M Manual.
Infrastructure O&M	Establish and implement program for repair and rehabilitation of MS4 infrastructure.
Stormwater Pollution Prevention Plans (SWPPPs)	Manchester will evaluate the need for new or updated SWPPPs for maintenance garages,

BMP	BMP Description
	transfer stations, and other waste handling facilities within the City. A listing of facilities evaluated and status of SWPPPs is maintained in Appendix H .
Catch basin cleaning	Manchester currently cleans and inspects all catch basins on a six-year cycle. Priority streets have been identified and catch basins on these streets are cleaned twice per year. The City has developed a plan for prioritizing catch basin cleaning with a goal that no catch basins are more than 50% full of sediment at any time, which is provided in Appendix I . Catch basin cleaning SOPs are also included in the prioritization plan and have been included in the City's O&M Manual.
Street sweeping program	Manchester sweeps all City streets and parking lots at least once a year after snow melt in accordance with permit conditions. The street sweeping SOP is found in the City's separate O&M Manual and in Appendix J . The City has an active City-wide curbside yard waste collection program to collect grass clippings, bush and tree trimmings and leaf litter. This program is available weekly for ½ of April and most of May, the last week in October, all of November and the first week of December, as well as every other week for the last week in May, all of June through September, and first few weeks of October. This yard waste collection program is used in lieu of a fall sweeping. Sweeping once a year is considered effective for addressing watersheds discharging to metals impairments, as sediment/debris accumulation rates appear to be similar to other areas of the City.
Inspection and maintenance of stormwater treatment structures	Manchester inspects and maintains BMPs as needed. An inventory of City-owned BMPs, inspection and maintenance schedules and SOPs are included in the separate O&M Manual.

9 TMDL and Impaired Waters Controls

9.1 Permit Requirements

The 2017 MS4 Permit requires regulated operators of MS4s to determine whether stormwater discharges from their MS4 contribute to any impaired waterbodies, including those that are subject to an approved TMDL and certain water quality limited water bodies. Water quality limited waters are any waterbodies that do not meet applicable water quality standards, including waterbodies listed in categories 5 or 4b on the most recent EPA-approved New Hampshire Clean Water Act section 303(d) list or New Hampshire Integrated Report under Clean Water Act section 305(b)

As shown in **Table 2-1**, the City of Manchester has multiple waterbodies on the New Hampshire Integrated List, however, not all of these impairments are associated with pollutants. Impaired waterbodies with completed TMDLs include those impaired for *E.coli* and phosphorus. Water quality limited waterbodies without completed TMDLs and regulated under the 2017 MS4 Permit include those impaired for E. Coli, lead, iron, chloride and phosphorus. Permittees with waterbodies listed as impaired for these criteria must implement control measures for discharges to approved TMDL waters and to impaired waters without a TMDL as summarized below. Progress towards meeting the TMDL and Impaired Waters requirements will be documented in **Appendix K**.

9.2 Discharges to Approved TMDL Waterbodies

Approved TMDLs are those that have been approved by EPA as of the effective date of the permit, or July 1, 2018. As shown in **Table 2-1**, the City of Manchester currently has multiple waterbodies with an approved TMDL for *E.coli* and phosphorus. Thus, the City is required to implement the following requirements as outlined in Appendix F of the 2017 MS4 Permit.

9.2.1 Bacteria TMDL Requirements

To address the bacteria TMDLs, the City of Manchester must include the following additional or enhanced BMPs, in addition to the six minimum control measures outlined previously:

- **Public Education** – supplement its Residential program with an annual message encouraging the proper management of pet waste and disseminate educational materials to dog owners at the time of issuance or renewal of a dog license. Education materials shall describe the detrimental impacts of improper management of pet waste, requirements for waste collection and disposal, and penalties for non-compliance. The City also must provide information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria or pathogens. These items have been incorporated into future public education outreach components as described in Section 3.
- **Illicit Discharge, Detection, and Elimination** – Designate catchments draining to bacteria or pathogen impaired segments as “Problem Catchments” or “HIGH” priority. This has been incorporated into Manchester’s IDDE Plan.

9.2.2 Phosphorus TMDL Requirements

To address phosphorus TMDLs, the City must include the following additional BMPs in addition to the six minimum control measures outlined previously:

- **Lake Phosphorus Control Plan (LPCP)** – The permittee shall develop a LPCP designed to reduce the amount of phosphorus in stormwater discharges from its MS4 to the impaired waterbody or its tributaries consistent with assumptions and requirements of the WLA for the phosphorus loadings published in the phosphorus TMDL. The LPCP shall be completed five years after effective date of permit. Progress towards LPCP development will be documented in **Appendix K**.

9.3 Discharges to Water Quality Limited Waterbodies

Water quality limited waterbodies are those that have been listed on the most recent approved New Hampshire Integrated List of Waters. For Manchester, existing water quality limited waterbodies listed in **Table 2-1** must adhere to the requirements in Appendix H of the 2017 MS4 Permit. The following sections describe those additional requirements. The City will review the most recent approved list of impaired waters as it is released and outline any additional requirements associated with the most recent list in **Appendix C**.

9.3.1 Bacteria

For waterbodies where bacteria or pathogens is the cause of the impairment, additional requirements are the same as those outlined above for Bacteria TMDLs.

9.3.2 Phosphorus

For waterbodies where phosphorus is the cause of the impairment, enhanced BMPs include the following:

- **Public Education** – Supplement its Residential and Businesses, Institutions, and Commercial Facilities program with an annual timed message on specific topics. The permittee shall distribute an annual message in the spring (April/May) timeframe that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorus-free fertilizers. The permittee shall distribute an annual message in the summer (June/July) timeframe encouraging the proper management of pet waste, including noting any existing ordinances where appropriate. The permittee shall distribute an annual message in the Fall (August/September/October) timeframe encouraging the proper disposal of leaf litter. These items have been incorporated into future public education outreach components as described in Section 3.
- **Stormwater Management in New Development and Redevelopment** – The requirement for adoption/amendment of the permittee's ordinance or other regulatory mechanism shall include a requirement that new development and redevelopment stormwater management

BMPs be optimized for phosphorus removal. This item has been incorporated into future ordinance updates as described in Section 7. Additionally, the retrofit inventory and priority ranking under MCM 5 shall include consideration of BMPs to reduce phosphorus discharges. This item has been incorporated into the future BMP retrofit inventory as described in Section 7.

- **Good Housekeeping and Pollution Prevention** – establish requirements for use of slow-release and phosphorus-free fertilizers on permittee owned property currently using fertilizer, establish procedures to properly manage grass cuttings and leaf litter on permittee property, and increase street sweeping frequency of all municipal owned streets and parking lots to a minimum of two times per year (spring and fall). In-lieu of post-leaf drop street sweeping, permittees may implement a fall leaf litter collection program to effectively minimize leaf litter on impervious surfaces and in stormwater drainage structures. These items have been incorporated into the future BMP retrofit inventory as described in Section 8.

The City of Manchester will also prepare a Phosphorus Source Identification Report for phosphorus impaired waters that generally includes the following and must be completed by the end of Year 4:

- Identifies, delineates, and prioritizes areas of the City at the catchment-level that have the highest phosphorus loading potential based on land use and other factors;
- Accounts for the urbanized area that discharges to the watersheds;
- Determines impervious area and disconnected impervious area (DCIA) for the target catchment;
- Accounts for any screening results performed under MCM 3 when developing conclusions; and
- Identifies potential retrofit opportunities for installing structural BMPs during redevelopment, including the removal of impervious area of permittee-owned properties.

The Phosphorus Source Identification Report progress will be documented in **Appendix K**.

Upon completion of the Phosphorus Source Identification Report, the City will evaluate all permittee-owned properties identified as providing retrofit opportunities or areas for structural BMP installation as identified under MCM 5 (inventory of potential retrofit sites). The evaluation shall include:

- The next planned infrastructure, resurfacing or redevelopment activity planned for the property or planned retrofit date;
- The estimated cost of redevelopment or retrofit BMPs; and
- The engineering and regulatory feasibility of retrofit BMPs.

Upon completion, the City will provide a list of planned structural BMPs, along with a plan and schedule for implementation by the end of Year 5. At least one BMP must be designed and constructed as a demonstration project by the end of Year 6 that targets a catchment with a high phosphorus load potential. Remaining structural BMPs must be constructed according to the provided plan and schedule. Phosphorus removals must be tracked and reported annually.

9.3.3 Chloride

For waterbodies where chloride is the cause of the impairment, additional requirements include:

- **Develop a Salt Reduction Plan** – A Salt Reduction Plan that includes specific actions designed to achieve salt reduction on municipal roads and facilities and on private facilities that discharge to its MS4 must be developed within three years of the effective date of the permit and implemented within five years. Planned activities for salt reduction on municipal facilities may include but are not limited to:
 - Operational changes such as pre-wetting, pre-treating the salt stockpile, increasing plowing prior to de-icing, monitoring of road surface temperature, etc.
 - Implementation of new or modified equipment providing pre-wetting capability, better calibration rates, or other capability for minimizing salt use
 - Training for municipal staff and/or contractors engaged in winter maintenance activities
 - Adoption of guidelines for application rates for roads and parking lots
 - Regular calibration of spreading equipment
 - Designation of no-salt and/or low salt zones
 - Public education regarding impacts of salt use, methods to reduce salt use on private property, modifications to driving behavior in winter weather, etc.
 - Measures to prevent exposure of salt stockpiles to precipitation and runoff

The plan should include an estimate of the total tonnage of salt reduction expected by each activity and a schedule for implementation of planned activities.

- **Privately Maintained Facilities** – The City must also address salting on private facilities as follows:
 - Identify private parking lots with ten or more parking spaces draining to the MS4.
 - Establish requirements for private parking lot owners and operators and private street owners and operators: (1) that any commercial salt applicators used for applications of salt to their parking lots or streets be trained and certified in accordance with Env-Wq 2203; and (2) to report annual salt usage within the municipal boundaries using the UNH Technology Transfer Center online tool (<http://www.roadsalt.unh.edu/Salt/>) or report salt usage directly to the permittee, in which case this information should be reported on the permittees annual report.
 - Require new development and redevelopment to minimize salt usage and to track and report amounts using the UNH Technology Transfer Center online tool.
- **Tracking** – The City must track the amount of salt applied to all municipally owned and maintained surfaces and reporting of salt use using the UNH Technology Transfer Center online tool beginning in the Year 2 Annual Report.

Progress towards meeting the chloride requirements will be documented in **Appendix K**.

9.3.4 Metals

Three waterbodies in Manchester have been identified as having impairments due to lead and iron. Additional requirements include:

- **Stormwater Management in New Development and Redevelopment** – Stormwater management systems designed on commercial and industrial land use area draining to the water quality limited waterbody shall incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event. EPA also encourages the permittee to require any stormwater management system designed to infiltrate stormwater on commercial or industrial sites to provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration as calculated using the methodologies contained in the EPA document: Stormwater Best Management Practices (BMP) Performance Analysis (2010) of the same volume of runoff to be infiltrated, prior to infiltration.
- **Good Housekeeping and Pollution Prevention for Permittee-Owned Operations** – Increased street sweeping and catch basin cleaning frequency of all municipal owned streets and parking lots to a schedule determined by the permittee to target areas with potential for high pollutant loads. This may include, but is not limited to, increased street sweeping frequency in commercial areas and high-density residential areas, or drainage areas with a large amount of impervious area. Each annual report shall include the street sweeping schedule determined by the permittee to target high pollutant loads.

Progress towards meeting the metal requirements will be tracked in **Appendix K**.

10 Annual Reporting

The permittee shall submit annual reports each year of the permit term. The reporting period will be a one-year period commencing on the permit effective date, and subsequent anniversaries thereof, except that the first annual report under this permit shall also cover the period from May 1, 2018 to the permit effective date. The annual report is due ninety days from the close of each reporting period, or by September 29 of each year.

The annual reports must contain the following relevant information which should be tracked throughout the year, and documented under **Appendix L**:

- A self-assessment review of compliance with the permit terms and conditions.
- An assessment of the appropriateness of the selected BMPs.
- The status of any plans or activities, including:
 - Identification of all discharges determined to be causing or contributing to an exceedance of water quality standards and description of response;
 - For discharges subject to TMDL requirements, identification of BMPs used to address the impairment and assessment of the BMPs effectiveness;

- For discharges to water quality limited waters a description of each BMP and any deliverables required.
- An assessment of the progress towards achieving the measurable goals and objectives of each of the Six Minimum Control Measures:
 - Evaluation of the public education program including a description of the targeted messages for each audience; method and dates of distribution; methods used to evaluate the program; and any changes to the program.
 - Description of the activities used to promote public participation including documentation of compliance with state public notice regulations.
 - Description of IDDE activities including: status of mapping and results of the ranking and assessment; identification of problem catchments; status of all IDDE Plan components; number and identifier of catchments evaluated; number and identifier of outfalls screened; number of illicit discharges located and removed; gallons of flow removed; identification of tracking indicators and measures of progress; and employee training.
 - Evaluation of construction runoff management including number of project plans reviewed; number of inspections; and number of enforcement actions.
 - Evaluation of stormwater management for new and redevelopment including status of ordinance development; review and status of the street design and barriers to green infrastructure assessment; and inventory status.
 - Status of the O&M Programs.
 - Status of SWPPPs, including inspection results.
- All outfall screening and monitoring data during the reporting period and cumulative for the permit term; and a description of any additional monitoring data received by the permittee during the reporting period.
- Description of activities for the next reporting cycle.
- Description of any changes in identified BMPs or measurable goals.
- Description of activities undertaken by any entity contracted for achieving any measurable goal or implementing any control measure.

11 Implementation of Best Management Practices

The City of Manchester's Best Management Practices Plan as outlined in the City's NOI (**Appendix A**) is summarized in **Table 11-1**.

For consistency with the six minimum control measures and impaired water requirements, the BMPs are broken down into seven categories:

1. Public Education and Outreach;
2. Public Participation and Involvement;
3. Illicit Discharge Detection and Elimination;
4. Construction Site Stormwater Runoff Control;
5. Stormwater Management in New Development and Redevelopment;
6. Good Housekeeping and Pollution Prevention; and
7. TMDL and Impaired Waters Controls

The BMP tables also outline the measurable goals for each BMP to gauge permit compliance, the responsible party(ies) for implementing each BMP, and an implementation schedule to be used throughout the permit period. In addition to the implementation activities outlined in this plan, the City will also perform the following activities throughout the duration of the permit:

1. **Program Evaluation** – conduct annual evaluations of the Stormwater Management Program for compliance with permit conditions. The evaluation must include a determination of the appropriateness of the selected BMPs in efforts towards achieving the measurable goals outlined in **Table 11-1**.
2. **Record Keeping** – maintain records that pertain to the Stormwater Management Program for a period of at least five years. Records need to be made available to the public and the City may charge a reasonable fee for copying. Records need not be submitted to EPA or NHDES unless specifically requested.
3. **Reporting** – submit an annual report to EPA, including the information as noted in Section 10.

Refer to EPA's website for a copy of the 2017 NH MS4 Permit.

Table 11-1. Best Management Practices Plan

BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1	2	3	4	5	6
					7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/23-7/1/24	7/1/24-7/1/25
MCM 1: Public Education										
1-1	Residential Education Program	Distribute varying promotional materials with information in spring on fertilizer and grass clippings using NH Stormwater Coalition outreach materials and framework.	DPW-EPD NH Regional Stormwater Coalition	Number of promotional materials distributed	x	x	x	x	x	x
		Distribute varying promotional materials with information in the summer on management of pet waste using NH Stormwater Coalition outreach materials and framework.		Number of hits on webpage	x	x	x	x	x	x
		Distribute varying promotional materials with information in the fall on disposal of leaf litter using NH Stormwater Coalition outreach materials and framework.		Number of hits on web page	x	x	x	x	x	x
		Incorporate information on lawn care, infiltration, automotive maintenance, and car washing on website.								
1-2	Businesses, Institutions, and Commercial Facilities Education Program	Distribute varying promotional materials with information in spring on fertilizer and grass clippings using NH Stormwater Coalition outreach materials and framework.	DPW-EPD NH Regional Stormwater Coalition	Number of promotional materials distributed	x	x	x	x	x	x
		Distribute varying promotional materials with information in the summer on management of pet waste using NH Stormwater Coalition outreach materials and framework.		Number of hits on webpage	x	x	x	x	x	x
		Distribute varying promotional materials with information in the fall on disposal of leaf litter using NH Stormwater Coalition outreach materials and framework.		Number of hits on web page	x	x	x	x	x	x
		Incorporate information on lawn care, infiltration, building maintenance, salt use and storage, material and waste management and storage, and parking lot maintenance into the existing website.								
1-3	Developers and Construction Education Program	Distribute information on sediment and erosion control management, LID, and CGP in City Hall using NH Stormwater Coalition outreach materials.	DPW-EPD	Number of promotional materials distributed	x	x	x	x	x	x
		Incorporate information on sediment and erosion control management, LID, and CGP on website with application materials.	NH Regional Stormwater Coalition	Number of hits on web page	x	x	x	x	x	x
1-4	Industrial Facilities Education Program	Distribute information on equipment inspection and maintenance, material storage, waste management, salt use and storage, infiltration parking lot maintenance and MSGP at the City Hall.	DPW-EPD	Number of promotional materials distributed	x	x	x	x	x	x
		Incorporate information on equipment inspection and maintenance, material storage, waste management, salt use and storage, infiltration parking lot maintenance and MSGP on website.	NH Regional Stormwater Coalition	Number of hits on web page	x	x	x	x	x	x

Table 11-1. Best Management Practices Plan										
BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1	2	3	4	5	6
					7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/23-7/1/24	7/1/24-7/1/25
MCM 2: Public Involvement and Participation										
2-1	Public Review	SWMP will be posted on the city website for public review. The SWMP will be reviewed annually and updated or revised as necessary.	DPW-EPD NH Regional Stormwater Coalition	Allow annual review of stormwater management plan and posting of stormwater management plan on website	x	x	x	x	x	x
2-2	Public Participation	The SWMP will be presented or communicated to the public with opportunity for comment. Meeting minutes will record public comments.	DPW-EPD NH Regional Stormwater Coalition	Allow public comment on stormwater management plan annually	x	x	x	x	x	x

Table 11-1. Best Management Practices Plan										
BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1	2	3	4	5	6
					7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/23-7/1/24	7/1/24-7/1/25
MCM 3: Illicit Discharge Detection and Elimination (IDDE)										
3-1	Sanitary Sewer Overflow inventory	An inventory of all SSOs from the previous five years will be developed. The inventory will include all SSOs discharging to the MS4 or directly to surface waters, start and end dates/times of the events, date/time reported, the estimated volume of flow from the SSO, the cause of the overflow, mitigation, and any planned follow-up actions.	DPW-EPD	Complete within one year of the effective date of permit	x					
3-2	Storm sewer system map	Manchester has completed a map of the storm sewer system. The map will be updated through the permit term as new information becomes available.	DPW-EPD	Update map within two years of effective date of permit and complete full system map ten years after effective date of permit		x	x	x	x	x
3-3	Written IDDE program development	A written IDDE program plan will be developed as a separate document from the SWMP.	DPW-EPD	Complete within one year of the effective date of permit and update as required	x					
3-4	Implement IDE program	The IDDE program will be implemented following the IDDE plan. All illicit discharges will be documented and follow-up catchment investigations will be conducted.	DPW-EPD	Complete ten years after effective data of permit	Complete by 2028					
3-5	Employee training	Manchester provides training to all staff involved in any aspect of stormwater management. The EPD focuses on informal field O&M training for field crews. Specific IDDE training for employees will be conducted.	DPW-EPD	Train annually	x	x	x	x	x	x
3-6	Conduct dry weather screening	Conduct in accordance with outfall screening procedures and permit conditions as outlined in the IDDE plan.	DPW-EPD	Complete three years after effective date of permit			x			
3-7	Conduct wet weather screening	Conduct in accordance with outfall screening procedures and permit conditions as outlined in the IDDE plan.	DPW-EPD	Complete ten years after effective data of permit	Complete by 2028					
3-8	Ongoing screening	Conduct dry and wet weather screening (as necessary) as outlined in the IDDE plan.	DPW-EPD	Complete ongoing outfall screening on completion of IDDE program	Upon completion of IDDE program					

Table 11-1. Best Management Practices Plan										
BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1	2	3	4	5	6
					7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/23-7/1/24	7/1/24-7/1/25
MCM 4: Construction Site Stormwater Runoff Control										
4-1	Site inspection and Enforcement of Erosion and Sediment Control (ESC) measures	1. Review existing stormwater regulations, ordinance, and other regulations for site inspections.	DPW-EPD	Complete within one year of the effective date of permit	x					
		2. Review existing site inspection checklist.	Planning Department		x					
		3. Develop written procedures for site inspections.			x					
4-2	Site Plan review	1. Review current regulations and site plan review process.	DPW-EPD	Complete within one year of the effective date of permit	x					
		2. Develop written procedures for site plan review as needed.	Planning Department		x					
4-3	Erosion and sediment control	1. Review existing regulations for construction operators to implement a sediment and erosion control program.	DPW-EPD	Complete within one year of the effective date of permit	x					
		2. Adopt further requirements for construction operators to develop and implement a sediment and erosion control program as needed to satisfy permit requirements.	Planning Department		x					
4-4	Waste control	1. Review existing regulations to control wastes.	DPW-EPD	Complete within one year of the effective date of permit	x					
		2. Adopt further requirements to control wastes as needed to satisfy permit requirements.	Planning Department		x					

BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1	2	3	4	5	6
					7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/23-7/1/24	7/1/24-7/1/25
MCM 5: Post-Construction Site Stormwater Management Program										
5-1	As-built plans for on-site stormwater control	Review existing regulations to determine existing requirements for the submission of as-built plans and long-term O&M of BMPs after construction and update as necessary.	DPW-EPD Planning Department	Require submission of as-built plans for completed projects		x				
5-2	Target properties to reduce impervious area	Complete an inventory and priority ranking of permittee-owned property and existing infrastructure that could be retrofitted with BMPs designed to reduce the frequency, volume and pollutant loads of stormwater discharges to the MS4 through the mitigation of impervious area.	DPW-EPD Planning Department	Complete four years after effective date of permit and report annually on retrofitted properties				x		
5-3	Allow green infrastructure	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support LID options.	DPW-EPD Planning Department	Complete four years after effective date of permit and implement recommendation of report				x		
5-4	Street design and parking lot guidelines	Develop a report assessing requirements that affect the creation of impervious cover. The assessment will help determine if changes to design standards for streets and parking lots can be modified to support LID options.	DPW-EPD Planning Department	Complete four years after effective date of permit and implement recommendation of report.				x		
5-5	Ensure any stormwater controls or management practices for new development and redevelopment meet the retention requirements of the permit and/or are consistent with the Southeast Watershed Alliance's Model Standards for Coastal Watershed Communities	Adoption, amendment, or modification of a regulatory mechanism to meet permit requirements.	DPW-EPD Planning Department	Complete two years after effective date of permit		x				

BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1	2	3	4	5	6
					7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/23-7/1/24	7/1/24-7/1/25
MCM 6: Municipal Good Housekeeping and Pollution Prevention										
6-1	Operation and Maintenance Procedures	Create written O&M procedures for parks and open spaces, buildings and facilities, and vehicles and equipment. These will be incorporated into a separate O&M Manual.	DPW-EPD	Complete and implement two years after effective date of permit		x				
6-2	Inventory all permittee-owned parks and open spaces, buildings and facilities, and vehicles and equipment.	Create inventory of all City facilities for incorporation into the O&M Manual.	DPW-EPD	Complete two years after effective date of permit and implement annually		x				
6-3	Infrastructure O & M	Establish and implement program for repair and rehabilitation of MS4 infrastructure.	DPW-EPD	Complete two years after effective data of permit		x				
6-4	Stormwater Pollution Prevention Plan (SWPPP)	Evaluate the need for new or updated SWPPPs for maintenance garages, transfer stations, and other waste handling facilities.	DPW-EPD	Complete two years after effective data of permit		x				
6-5	Catch basin cleaning	Establish schedule for catch basin cleaning such that each catch basin is no more than 50% full and clean catch basins on that schedule. Manchester currently cleans and inspects all catch basins on a six-year cycle. Priority streets have been identified and catch basins on these streets are cleaned twice per year. The City has developed a plan for prioritizing catch basin cleaning with a goal that no catch basins are more than 50% full of sediment at any time. The prioritization will be amended as new data is collected.	DPW-EPD	Clean catch basins on established schedule and report number of catch basins cleaned and volume of material moved annually	x	x	x	x	x	x
6-6	Street sweeping program	Sweep all permittee-owned streets and parking lots in accordance with permit conditions.	DPW-EPD	Sweep all streets and permittee owned parking lots once per year in the spring	x	x	x	x	x	x
6-7	Inspection and maintenance of stormwater treatment structures	Establish and implement BMP inspection and maintenance procedures and frequencies.	DPW-EPD	Inspect and maintain treatment structures at least annually	x	x	x	x	x	x

Table 11-1. Best Management Practices Plan										
BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1	2	3	4	5	6
					7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/23-7/1/24	7/1/24-7/1/25
7 - Total Maximum Daily Load (TMDL) and Water Quality Limited Waterbody Requirements										
Bacteria TMDL & Water Quality Limited Waterbodies										
7-1	Public Education	Supplement the residential program with an annual message encouraging the proper management of pet waste and disseminate educational materials to dog owners at the time of issuance or renewal of dog licenses.	DPW-EPD	Issue additional annual messages	x	x	x	x	x	x
		Provide information to owners of septic systems about proper maintenance in any catchment that discharges to a waterbody impaired for bacteria or pathogens.			x	x	x	x	x	x
7-2	Illicit Discharge, Detection, and Elimination	Designate catchments draining to bacteria or pathogen impaired segments as "Problem Catchments" or "HIGH" priority.	DPW-EPD	Include in IDDE Plan	x					
Phosphorus TMDL										
7-3	Lake Phosphorus Control Plan (LPCP)	The permittee shall develop a LPCP designed to reduce the amount of phosphorus in stormwater discharges from the MS4 to the impaired waterbody or its tributaries consistent with assumptions and requirements of the WLA for the phosphorus loadings published in the phosphorus TMDL.	DPW-EPD	Complete five years after effective date of the permit					x	

Table 11-1. Best Management Practices Plan										
BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1 7/1/18-7/1/19	2 7/1/19-7/1/20	3 7/1/20-7/1/21	4 7/1/21-7/1/22	5 7/1/23-7/1/24	6 7/1/24-7/1/25
7 - Total Maximum Daily Load (TMDL) and Water Quality Limited Waterbody Requirements										
Phosphorus Water Quality Limited Waterbodies										
7-4	Public Education	Supplement the Residential and Businesses, Institutions, and Commercial Facilities program with an annual timed message on specific topics. Manchester will distribute an annual message in the spring (April/May) timeframe that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release and phosphorus-free fertilizers. Distribute an annual message in the summer (June/July) timeframe encouraging the proper management of pet waste, including noting any existing ordinances where appropriate. Distribute an annual message in the Fall (August/September/October) timeframe encouraging the proper disposal of leaf litter.	DPW-EPD	Issue additional annual messages	x	x	x	x	x	x
7-5	Regulatory Updates - Stormwater Management in New Development and Redevelopment	Include a requirement in local regulations that new development and redevelopment stormwater management BMPs be optimized for phosphorus and metals removal.	DPW-EPD	Amended ordinance		x				
7-6	MS4 Property Retrofits	Consider BMPs that infiltrate when identifying MS4 properties for retrofits.	DPW-EPD	Evaluate stormwater BMPs for phosphorus removal during facility inventory within 4 years of the effective date of the permit				x		
7-7	Good Housekeeping O&M - Lawn and Leaf Care	Establish requirements for use of slow-release and phosphorus-free fertilizers on permittee owned property currently using fertilizer, establish procedures to properly manage grass cuttings and leaf litter on permittee property.	DPW-EPD	Incorporate procedures into written O&M Plan.		x	x	x	x	x
7-8	Increased Street Sweeping or Leaf Collection Program	Increase street sweeping frequency of all municipal owned streets and parking lots to a minimum of two times per year (spring and fall) or implement a leaf collection program in these areas.	DPW-EPD	Implement a leaf collection program or sweep all streets and permittee-owned parking lots within phosphorus water quality limited waterbody watershed twice per year		x	x	x	x	x
7-9	Phosphorus Source Identification Report	1. Prepare a Phosphorus Source Identification Report to identify, delineate, prioritize catchments with high phosphorus loading and identify potential retrofit opportunities or opportunities for the installation of structural BMPs during redevelopment.	DPW-EPD	Issue additional annual messages				x		
		2. Evaluate municipal properties for potential BMPs to construct one that will treat phosphorus, determine estimated costs, and determines engineering and regulatory feasibility.	DPW-EPD	Evaluate municipal facilities within 5 years of the permit effective date to determine candidates for a phosphorus BMP					x	
7-10	Demonstration BMP	1. Design and install structural and non-structural BMPs to remove phosphorus from stormater runoff.	DPW-EPD	Installed demonstration BMP within 6 years of the effective date of the permit					x	x
		2. Track BMPs installed, including type, location, total area treated, design storage volume and estimated phosphorus removal and report annually to EPA.	DPW-EPD	Summary progress table						x
7 - Total Maximum Daily Load (TMDL) and Water Quality Limited Waterbody Requirements										
Chloride Water Quality Limited Waterbodies										
7-11	Salt Reduction Plan	Develop a Salt Reduction Plan that includes specific actions designed to achieve salt reduction on municipal roads and facilities and on private facilities that discharge to the MS4.	DPW-EPD	Complete three years after effective date of the permit			x			

Table 11-1. Best Management Practices Plan										
BMP ID	BMP	Description	Responsible Department/Person	Measurable Goal	Permit Year					
					1	2	3	4	5	6
					7/1/18-7/1/19	7/1/19-7/1/20	7/1/20-7/1/21	7/1/21-7/1/22	7/1/23-7/1/24	7/1/24-7/1/25
7-12	Privately Maintained Facilities	Identify private parking lots with 10 or more parking spaces draining to the MS4; establish requirements for parking lot owners that any applicators be trained and certified and report annual salt usage within the municipal boundaries; and require new development and redevelopment to minimize salt usage and track salt usage.	DPW-EPD	Requirements for trained applicators and salt tracking			x	x		
7-13	Tracking of Salt	Track the amount of salt applied to all municipally-owned surfaces.	DPW-EPD	Track quantity of salt used		x	x	x	x	x
Metals Water Quality Limited Waterbodies										
7-14	Stormwater Management in New Development and Redevelopment	Include a requirement in local regulations that stormwater management systems designed on commercial and industrial land use areas draining to the water quality limited waterbody incorporate designs that allow for shutdown and containment where appropriate to isolate the system in the event of an emergency spill or other unexpected event. Consider requiring any stormwater management system designed to infiltrate stormwater on commercial or industrial sites to provide the level of pollutant removal equal to or greater than the level of pollutant removal provided through the use of biofiltration as calculated using the methodologies contained in the EPA document: Stormwater Best Management Practices (BMP) Performance Analysis (2010). of the same volume of runoff to be infiltrated, prior to infiltration.	DPW-EPD	Amended ordinance		x				
7-15	Good Housekeeping	Evaluate the need for increased sweeping in areas that discharge to waterbodies impaired with metals. Include the street sweeping schedule in the annual report.	DPW-EPD	Street sweeping and catch basin plans	x					